



COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

PIEDMONT REGIONAL OFFICE

4949A Cox Road, Glen Allen, Virginia 23060

(804) 527-5020 Fax (804) 527-5106

www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

Michael P. Murphy
Regional Director

January 28, 2015

Mr. Mark D. Mitchell
Vice President of Generation and Construction
Virginia Electric and Power Company
5000 Dominion Blvd.
Glen Allen, VA 23060

Location: Brunswick County
Registration No.: 52404

Dear Mr. Mitchell:

Attached is a permit to modify and operate an electric power generation facility in accordance with the provisions of the Virginia State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution. This permit supersedes your permit dated March 12, 2013.

In the course of evaluating the application and arriving at a final decision to approve the project, the Department of Environmental Quality (DEQ) deemed the application complete on November 17, 2014 and solicited written public comments by placing a newspaper advertisements in the Brunswick Times-Gazette and Independent Messenger (Emporia) on December 10, 2014. A public hearing was held on January 12, 2015. The required comment period, provided by 9 VAC 5-80-1775 F expired on January 27, 2015. No comments were received.

This permit contains legally enforceable conditions. Failure to comply may result in a Notice of Violation and/or civil charges. Please read all permit conditions carefully.

This permit approval to modify and operate shall not relieve Virginia Electric and Power Company of the responsibility to comply with all other local, state, and federal permit regulations. Please note that your proposed emergency generator (EG-1) and emergency fire water pump (FWP-1) may be affected facilities under 40 CFR 60, New Source Performance Standard (NSPS), Subpart IIII and the propane emergency generator (EG-2) may be an affected facility under NSPS, Subpart JJJJ. Therefore, these units may be subject to owner/operator requirements of the NSPS and 40 CFR 63, Maximum Achievable Control Technology (MACT), Subpart ZZZZ,. In summary, the units could be required to comply with certain federal emission standards and operating limitations over their useful life. The DEQ advises you to review the attached NSPS and MACT to ensure compliance with applicable emission and operational limitations. As the owner/ operator you are also responsible for monitoring, notification, reporting and recordkeeping requirements of the NSPS and MACT. Notifications for these regulations and the results of performance tests required by 40 CFR 60, Subparts Dc, IIII, JJJJ and KKKK shall be sent to:

Associate Director
Office of Air Enforcement (3AP20)
U.S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

The Board's Regulations as contained in Title 9 of the Virginia Administrative Code 5-170-200 provide that you may request a formal hearing from this case decision by filing a petition with the Board within 30 days after this case decision notice was mailed or delivered to you. 9 VAC 5-170-200 provides that you may request direct consideration of the decision by the Board if the Director of the DEQ made the decision. Please consult the relevant regulations for additional requirements for such requests.

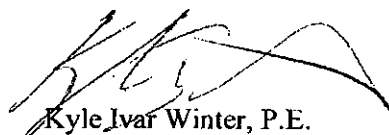
As provided by Rule 2A:2 of the Supreme Court of Virginia, you have 30 days from the date you actually received this permit or the date on which it was mailed to you, whichever occurred first, within which to initiate an appeal of this decision by filing a Notice of Appeal with:

David K. Paylor, Director
Department of Environmental Quality
P. O. Box 1105
Richmond, VA 23218

If this permit was delivered to you by mail, three days are added to the thirty-day period in which to file an appeal. Please refer to Part Two A of the Rules of the Supreme Court of Virginia for information on the required content of the Notice of Appeal and for additional requirements governing appeals from decisions of administrative agencies.

If you have any questions concerning this permit, please contact the regional office at (804) 527-5020.

Sincerely,



Kyle Ivar Winter, P.E.
Deputy Regional Director

KIW/AMS/52404_003_15_PSDmajmod.docx

Attachments: Permit
Source Testing Report Format

The following federal regulations can be found at: <http://www.gpo.gov/fdsys/search/showcitation.action>

Title 40, Chapter I, Subchapter C

Part 60, NSPS, Subparts Dc, IIII, JJJJ, and KKKK

Part 63, MACT, Subpart ZZZZ

cc: Director, OAPP (electronic file submission)
Chief, Office of Air Enforcement and Compliance Assistance, U.S. EPA, Region III (electronic file submission)
Inspector, Air Compliance



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David K. Paylor
Director

Michael P. Murphy
Regional Director

PREVENTION OF SIGNIFICANT DETERIORATION PERMIT
This permit includes designated equipment subject to
New Source Performance Standards (NSPS).

This permit supersedes your permit dated March 12, 2013

In compliance with the Federal Clean Air Act and the Commonwealth of Virginia
Regulations for the Control and Abatement of Air Pollution,

Virginia Electric and Power Company
5000 Dominion Boulevard
Glen Allen, Virginia 23060
Registration No.: 52404
County-Plant ID: 025-0037

is authorized to modify and operate

an electric power generation facility

located at

20100 Governor Harrison Parkway, Freeman, VA 23856
(south of Rte 58, approximately 1.3 mi NE of Racume, Brunswick
Co., VA)

in accordance with the Conditions of this permit.

Approved on January 28, 2015.


Deputy Regional Director
Department of Environmental Quality

Permit consists of 28 pages.
Permit Conditions 1 to 84.

INTRODUCTION

This permit approval is based on the permit applications dated December 20, 2011 and June 30, 2014; including amendment information dated March 7, 2012; September 7, 2012; November 5, 2012; December 21, 2012; and November 17, 2014. Any changes in the permit application specifications or any existing facilities which alter the impact of the facility on air quality may require a permit. Failure to obtain such a permit prior to construction may result in enforcement action. In addition, this facility may be subject to additional applicable requirements not listed in this permit.

Words or terms used in this permit shall have meanings as provided in 9 VAC 5-10-20 of the State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution. The regulatory reference or authority for each condition is listed in parentheses () after each condition.

Annual requirements to fulfill legal obligations to maintain current stationary source emissions data will necessitate a prompt response by the permittee to requests by the DEQ or the Board for information to include, as appropriate: process and production data; changes in control equipment; and operating schedules. Such requests for information from the DEQ will either be in writing or by personal contact.

The availability of information submitted to the DEQ or the Board will be governed by applicable provisions of the Freedom of Information Act, §§ 2.2-3700 through 2.2-3714 of the Code of Virginia, § 10.1-1314 (addressing information provided to the Board) of the Code of Virginia, and 9 VAC 5-170-60 of the State Air Pollution Control Board Regulations.

Information provided to federal officials is subject to appropriate federal law and regulations governing confidentiality of such information.

PROCESS REQUIREMENTS

1. **Equipment List** - Equipment at this facility consists of the following:

Equipment to be Constructed			
Ref. No.	Equipment Description	Rated Capacity	Federal Requirements
Three on one power block with three natural gas-fired combustion turbine generators, each with a duct-fired heat recovery steam generator (HRSG), providing steam to a common steam turbine generator			
T-1M	Mitsubishi M501 GAC combustion turbine generator with HRSG duct burner (natural gas-fired)	3,442 MMBtu/hr	NSPS Subpart KKKK NOx trading Subparts AA-II, AAA-III, and AAAA-IIII
T-2M	Mitsubishi M501 GAC combustion turbine generator with HRSG duct burner (natural gas-fired)	3,442 MMBtu/hr	NSPS Subpart KKKK NOx trading Subparts AA-II, AAA-III, and AAAA-IIII
T-3M	Mitsubishi M501 GAC combustion turbine generator with HRSG duct burner (natural gas-fired)	3,442 MMBtu/hr	NSPS Subpart KKKK NOx trading Subparts AA-II, AAA-III, and AAAA-IIII

Equipment to be Constructed			
Ref. No.	Equipment Description	Rated Capacity	Federal Requirements
Ancillary Equipment			
B-1	Auxiliary Boiler (natural gas-fired)	30.6 MMBtu/hr	NSPS Subpart Dc
GH-1, 2, 3	Three Fuel Gas Heaters (natural gas-fired)	8 MMBtu/hr each	None
EG-1	Emergency Generator (diesel)	2200 kW	NSPS Subpart IIII (non-delegated) MACT Subpart ZZZZ (non-delegated)
EG-2	Emergency Generator (propane)	100 kW	NSPS Subpart JJJJ (non-delegated) MACT Subpart ZZZZ (non-delegated)
FWP-1	Fire Water Pump (diesel)	376 bhp	NSPS Subpart IIII (non-delegated) MACT Subpart ZZZZ (non-delegated)
AEC-1	Delugeable Auxiliary Equipment Cooler	97,200 gallons of water/hr	None
IC-1 through 4	Four Turbine Inlet Air Chillers (mechanical draft cooling towers)	570,000 gallons of water/hr each	None
CB-1 through CB-11	Eleven Electrical Circuit Breakers	18,095 lb SF ₆	None
ST-1	Distillate fuel oil tank	6,000 gallons	None

Specifications included in the permit under this Condition are for informational purposes only and do not form enforceable terms or conditions of the permit.
(9 VAC 5-80-1745)

Combined-cycle gas turbine generators and duct-fired HRSG (T-1M, T-2M, T-3M)

2. **Emission Controls: Nitrogen Oxides** - Nitrogen oxide (NO_x) emissions from each of the combined cycle gas turbine generators and associated duct-fired heat recovery steam generators (HRSG) (T-1M, T-2M, T-3M) shall be controlled by dry, low NO_x burners and selective catalytic reduction (SCR) with a NO_x performance of 2.0 ppmvd at 15% O₂ for natural gas. The low NO_x burners shall be installed and operated in accordance with manufacturer's specifications. The SCR shall be provided with adequate access for inspection and shall be in operation when the combined cycle gas turbine generators are operating (at all times except during startup and shutdown, as defined in Condition 12).
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
3. **Monitoring Devices: SCR** - Each SCR system shall be equipped with devices to continuously measure, or allow calculation of, and record ammonia feed rate and catalyst bed inlet gas temperature. Each monitoring device shall be installed, maintained, calibrated and operated in accordance with approved procedures that shall include, as a minimum, the manufacturer's written requirements or recommendations. Each monitoring device shall be provided with adequate access for inspection and shall be in operation when the SCR system is operating.
(9 VAC 5-50-20 C and 9 VAC 5-80-1705 B)
4. **Monitoring Device Observation: SCR** -To ensure good performance of the SCR, the devices used to continuously measure the ammonia feed rate and catalyst bed inlet temperature on the SCR shall be monitored by the permittee.
(9 VAC 5-50-50H and 9 VAC 5-80-1705 B)

5. **Emission Controls: Carbon Monoxide** – Carbon monoxide (CO) emissions from each of the combined cycle gas turbine generators and associated duct-fired HRSG (T-1M, T-2M, T-3M) shall be controlled by an oxidation catalyst and good combustion practices. The oxidation catalyst shall be provided with adequate access for inspection and shall be in operation when the combined cycle gas turbine generators are operating (at all times except during startup and shutdown, as defined in Condition 12).
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
6. **Emission Controls: Volatile Organic Compounds** – Volatile organic compound (VOC) emissions from each of the combined cycle gas turbine generators and associated duct-fired HRSG (T-1M, T-2M, T-3M) shall be controlled by an oxidation catalyst and good combustion practices. The oxidation catalyst shall be provided with adequate access for inspection and shall be in operation when the combined cycle gas turbine generators are operating (at all times except during startup and shutdown, as defined in Condition 12).
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
7. **Monitoring Devices: Oxidation Catalyst** - Each oxidation catalyst shall be equipped with a device to continuously measure and record temperature at the catalyst bed inlet and outlet. Each monitoring device shall be installed, maintained, calibrated and operated in accordance with approved procedures that shall include, at a minimum, the manufacturer's written requirements or recommendations. Each monitoring device shall be provided with adequate access for inspection and shall be in operation when the oxidation catalyst is operating.
(9 VAC 5-50-20 C, 9 VAC 5-50-280, and 9 VAC 5-80-1705 B)
8. **Monitoring Device Observation: Oxidation Catalyst** - To ensure good performance of the oxidation catalyst system, the device used to continuously measure and record the catalyst bed inlet and outlet gas temperature on the oxidation catalyst shall be monitored by the permittee.
(9 VAC 5-50-50H and 9 VAC 5-80-1705 B)
9. **Emission Controls: Sulfur dioxide and sulfuric acid mist** – Sulfur dioxide (SO₂) and sulfuric acid mist (H₂SO₄) emissions from each of the combined cycle gas turbine generators and associated duct-fired HRSG (T-1M, T-2M, T-3M) shall be controlled by the use of pipeline-quality natural gas with a maximum sulfur content of 0.4 grains per 100 standard cubic feet (scf), on a 12-month rolling average.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
10. **Emission Controls: Particulate Matter** – Particulate Matter (PM₁₀, PM_{2.5}) emissions from each of the combined cycle gas turbine generators and associated duct-fired HRSG (T-1M, T-2M, T-3M) shall be controlled by good combustion practices and the use of pipeline-quality natural gas with a maximum sulfur content of 0.4 grains per 100 standard cubic feet (scf), on a 12-month rolling average.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)

11. **Emission Controls: Greenhouse Gases** – Greenhouse gas emissions (including carbon dioxide, methane, and nitrous oxide), as CO₂e from the combined cycle gas turbine generators and associated duct-fired HRSG (T-1M, T-2M, T-3M) shall be controlled by the use of low carbon fuel (natural gas) and high efficiency design and operation of the combined cycle gas turbine generators and associated duct-fired HRSG (T-1M, T-2M, T-3M and steam turbine generator). The combined cycle gas turbine generators and associated duct-fired HRSG (T-1M, T-2M, T-3M and steam turbine generator) shall operate at a higher heating value heat rate, at full load and corrected to ISO conditions, not to exceed 7,500 Btu/kWh net (HHV) output. Compliance with this limit shall be demonstrated as contained in Conditions 67 and 69.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
12. **Startup/Shutdown** – The short-term emission limits contained in Condition 40 apply at all times except during periods of startup and shutdown.
 - a. Startup and shutdown periods are defined as follows:
 - i. Cold Startup – refers to restarts made 72 hours or more after shutdown. Exclusion from the short-term emissions limits for cold startup periods shall not exceed 436 minutes per occurrence.
 - ii. Warm Startup – refers to restarts made more than 8 but less than 72 hours after shutdown. Exclusion from the short-term emissions limits for warm startup periods shall not exceed 166 minutes per occurrence.
 - iii. Hot Startup – refers to restarts made 8 hours or less after shutdown. Exclusion from the short-term emissions limits for hot startup periods shall not exceed 84 minutes per occurrence.
 - iv. Shutdown – refers to the period between the time the turbine load drops below 50 percent operating level and the fuel supply to the turbine is cut. Exclusion from the short-term emissions limits for shutdown shall not exceed 30 minutes per occurrence.
 - b. The permittee shall operate the CEMS during periods of startup and shutdown.
 - c. The permittee shall record the time, date and duration of each startup and shutdown event. The records must include calculations of NO_x and CO emissions during each event based on the CEMS data. These records must be kept for five years following the date of such event.
 - d. During startup, the combustion turbine SCR system, including ammonia injection, shall be operated in a manner to minimize emissions, as technologically feasible, and not later than when the load reaches 50 percent of unit output.
 - e. The permittee shall operate the facility so as to minimize the frequency and duration of startup and shutdown events.
(9 VAC 5-50-280 and 9 VAC 5-80-1705)

Auxiliary boiler (B-1) and fuel gas heaters (GH-1 through GH-3)

13. **Emission Controls: Nitrogen Oxides** – NO_x emissions from the auxiliary boiler (B-1) and three fuel gas heaters (GH-1 through GH-3) shall be controlled by ultra low-NO_x burners with a NO_x performance of 9 ppmvd at 3% O₂ for natural gas. The low NO_x burners shall be installed and operated in accordance with manufacturer's specifications.
(9 VAC 5-50-280 and 9 VAC 5-80-1705 B)
14. **Emission Controls: Carbon Monoxide and Volatile Organic Compounds** – CO and VOC emissions from the auxiliary boiler (B-1) and fuel gas heaters (GH-1 through GH-3) shall be controlled by good combustion practices, operator training, and proper emissions unit design, construction and maintenance to achieve a maximum CO emission rate of 50 ppmvd at 3% O₂. Boiler and heater operators shall be trained in the proper operation of all such equipment. Training shall consist of a review and familiarization of the manufacturer's operating instructions, at a minimum. The permittee shall maintain records of the required training including a statement of time, place and nature of training provided. The permittee shall have available good written operating procedures and a maintenance schedule for the boiler and heater. These procedures shall be based on the manufacturer's recommendations, at a minimum. All records required by this condition shall be kept on site and made available for inspection by the DEQ.
(9 VAC 5-50-280 and 9 VAC 5-80-1705 B)
15. **Emission Controls: Sulfur dioxide and sulfuric acid mist** – SO₂ and H₂SO₄ emissions from auxiliary boiler (B-1) and three fuel gas heaters (GH-1 through GH-3) shall be controlled by the use of pipeline-quality natural gas with a maximum sulfur content of 0.4 grains per 100 standard cubic feet (scf), on a 12-month rolling average.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
16. **Emission Controls: Particulate Matter** – PM₁₀ and PM_{2.5} emissions from the auxiliary boiler (B-1) and three fuel gas heaters (GH-1 through GH-3) shall be controlled by good combustion practices and the use of pipeline-quality natural gas with a maximum sulfur content of 0.4 grains per 100 scf, on a 12-month rolling average.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
17. **Emission Controls: Greenhouse Gases** – CO_{2e} from the auxiliary boiler (B-1) and three fuel gas heaters (GH-1 through GH-3) shall be controlled by the use of natural gas fuel and high efficiency design and operation.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)

Emergency Units (EG-1, EG-2 and FWP-1)

18. **Emission Controls: EG-1, FWP-1** - PM₁₀, PM_{2.5}, NO_x, CO, SO₂, VOC, and H₂SO₄ emissions from the diesel emergency units (EG-1 and FWP-1) shall be controlled by good combustion practices and the use of ultra low sulfur diesel fuel oil with a maximum sulfur content of 15 ppmw.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)

19. **Emission Controls: EG-2** - PM_{10} , $PM_{2.5}$, NO_x , CO , SO_2 , VOC , and H_2SO_4 emissions from the propane emergency unit (EG-2) shall be controlled by good combustion practices.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
20. **Emission Controls: Greenhouse gasses** – CO_2e emissions from the diesel emergency units (EG-1 and FWP-1) shall be controlled by the use of low carbon fuel and high efficiency design and operation.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
21. **Monitoring Devices** – The permittee must install a non-resettable hour meter on the emergency generators (EG-1 and EG-2) and the emergency fire water pump (FWP-1) prior to the startup of each unit. The hour meters shall be provided with adequate access for inspection.
(9 VAC 5-50-280 and 9 VAC 5-80-1705 B)
22. **Maintenance and Operation** – The permittee must maintain and operate the emergency generators (EG-1 and EG-2) and the emergency fire water pump (FWP-1) according to the manufacturer's written instructions, or procedures developed by the permittee that are approved by the manufacturer, over the entire life of the engine. In addition, the permittee may only change those settings that are approved by the manufacturer or DEQ.
(9 VAC 5-50-280 and 9 VAC 5-80-1705 B)

Miscellaneous Processes

23. **Emission Controls: Inlet Chillers** – Particulate matter emissions from the four, 11,500-gallon/minute inlet chillers (CH-1 through CH-4) shall be controlled to a drift rate of 0.0005 percent of the circulating water flow and a total dissolved solids content of the cooling water of no more than 1000 mg/l. The permittee shall keep a log of weekly testing for total dissolved solids content of the cooling water. Weekly testing for dissolved solids shall be done when the Chiller Package is in service for more than eight consecutive hours during a calendar week.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
24. **Emission Controls: Delugeable Auxiliary Equipment Cooler** – Particulate matter emissions from the 1,620 gallon/minute delugeable auxiliary equipment cooler (AEC-1) shall be controlled to a drift rate of 0.010 percent of the circulating water flow and a total dissolved solids content of the cooling water of no more than 300 mg/l. The permittee shall keep a log of weekly testing for total dissolved solids content of the cooling water. Weekly testing for total dissolved solids shall be done when the Deluge System is in service for more than two consecutive hours during a calendar week.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
25. **Emission Controls: Electrical breakers** – Greenhouse gas emissions (including SF_6) from the electrical circuit breakers (CB-1 through CB-11) shall be controlled by an enclosed-pressure circuit breaker, with a maximum annual leakage rate of 1.0 percent, and a low

pressure detection system (with alarm). The low pressure detection system shall be in operation when the circuit breakers are in use.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)

OPERATING LIMITATIONS

26. **Fuel: Gas turbines and auxiliary boiler** - The approved fuel for the combined cycle gas turbine generators and associated duct-fired HRSG (T-1M, T-2M, T-3M), fuel gas heaters (GH-1 through GH-3) and the auxiliary boiler (B-1) is pipeline quality natural gas with a maximum sulfur content of 0.4 grains per 100 scf. A change in the fuel may require a permit to modify and operate.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
27. **Fuel Throughput: Gas turbines** -The three combined cycle gas turbine generators and associated duct-fired HRSG (T-1M, T-2M, T-3M) combined shall consume no more than a total of $88,682 \times 10^6$ scf of natural gas per year, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
28. **Fuel Monitoring: Gas turbines** – The permittee shall conduct tests for the total sulfur content of the natural gas being fired at the electric power generation facility to verify that the sulfur content of the natural gas is 0.4 grains of total sulfur per 100 scf on a 12-month rolling average in order to demonstrate that potential sulfur dioxide emissions shall not exceed the limits specified in Condition 40. The permittee shall demonstrate compliance with the sulfur content limit in Condition 26 using one of the following:
- a. Determine and record the total sulfur content of the natural gas each month. A monthly sample is not required for months when the turbines operated for 48 hours or less, or
 - b. Develop custom schedules for determination of the sulfur content of the natural gas based on the design and operation of the affected facility and the characteristics of the fuel supply. Except as provided in 40 CFR 60.4370(c)(1) and (c)(2), custom schedules shall be substantiated with data and shall receive prior EPA approval.
- (9 VAC 5-50-410, 9 VAC 5-50-280, 40 CFR 60.4365(a), 40 CFR 60.4370(b), and 40 CFR 60.4370(c))
29. **Fuel Throughput: Auxiliary boiler** -The auxiliary boiler (B-1) shall consume no more than 263×10^6 scf of natural gas per year, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)

30. **Fuel: Diesel fire water pump and emergency diesel generator** - The approved fuel for the emergency diesel fire water pump (FWP-1) and emergency diesel generator (EG-1) is ultra low sulfur diesel (ULSD). A change in the fuel may require a permit to modify and operate. (9 VAC 5-80-1705 B and 9 VAC 5-50-280)
31. **Fuel: propane-fired emergency generator** - The approved fuel for the emergency generator (EG-2) is liquid petroleum gas (LPG)(as propane). A change in the fuel may require a permit to modify and operate. (9 VAC 5-80-1705 B and 9 VAC 5-50-280)
32. **Fuel: Fire water pump and emergency generators**- The fuels for the fire pump (FWP-1) and generators (EG-1 and EG-2) shall meet the specifications below:
DIESEL FUEL (ULSD) which meets the ASTM D975-10b specification for S15 fuel oil:
Maximum sulfur content per shipment: 0.0015%

LPG, including butane and propane, which meets ASTM specification D1835.
(9 VAC 5-80-1705 B and 9 VAC 5-50-280)
33. **Operating Hours: Fire water pump** - The emergency fire water pump (FWP-1) shall not operate more than 500 hours per year, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months. (9 VAC 5-80-1705 B and 9 VAC 5-50-280)
34. **Operating Hours: Emergency generators** - The emergency generators (EG-1 and EG-2) shall not operate more than 500 hours each per year, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months. (9 VAC 5-80-1705 B and 9 VAC 5-50-280)
35. **Emergency Operation: Generators and fire water pump** – The operation of the emergency generators (EG-1 and EG-2) and fire water pump (FWP-1) is limited to emergency situations. Emergency situations include a) emergency generator use to produce power for critical networks or equipment (including power supplied to portions of the facility) when electric power from the local utility (or the normal source, if the facility runs on its own power production) is interrupted and b) emergency engine use to pump water in the case of fire or flood, etc. The emergency generators (EG-1 and EG-2) and fire water pump (FWP-1) may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by federal, state, or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per calendar year for each unit. (9 VAC 5-80-1705 B and 9 VAC 5-50-280)

36. **Fuel Certification** - The permittee shall obtain a certification from the fuel supplier with each shipment of ULSD oil. Each fuel supplier certification shall include the following:
- a. The name of the fuel supplier;
 - b. The date on which the ULSD oil was received;
 - c. The quantity of ULSD oil delivered in the shipment;
 - d. A statement that the ULSD oil complies with the American Society for Testing and Materials specifications ASTM D975 for Grades 1 or 2 Ultra Low Sulfur fuel oil, or other DEQ approved fuel specifications;
 - e. The sulfur content of the ULSD oil;

Fuel sampling and analysis, independent of that used for certification, as may be periodically required or conducted by DEQ may be used to determine compliance with the fuel specifications stipulated in Condition 32. Exceedance of these specifications may be considered credible evidence of the exceedance of emission limits.

(9 VAC 5-50-280)

37. **Maintenance and Operation: Fire water pump and emergency generators** – The permittee must maintain and operate the emergency fire pump (FWP-1) and emergency generators (EG-1 and EG-2) according to the manufacturer's written instruction, or procedures developed by the permittee that are approved by the manufacturer, over the entire life of the engine. In addition, the permittee may only change those settings that are approved by the manufacturer or DEQ.

(9 VAC 5-50-280)

38. **Fuel Throughput: Fuel gas heater** -The three fuel gas heaters (GH-1 through GH-3) combined shall consume no more than a total of 206×10^6 scf of natural gas per year, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

(9 VAC 5-50-280)

39. **Requirements by Reference** - Except where this permit is more restrictive than the applicable requirement, the NSPS equipment as described in Condition 1 shall be operated in compliance with the requirements of 40 CFR 60, Subparts Dc and KKKK.

(9 VAC 5-50-400 and 9 VAC 5-50-410)

EMISSION LIMITS

40. **Short-Term Emission Limits: Gas Turbines** -Emissions from the operation of each combined-cycle gas turbine generator and associated HRSG duct burner (T-1M, T-2M, T-3M), shall not exceed the limits specified below:

Pollutant	Short term emission limits
PM ₁₀ (including condensable PM)	0.0033 lb/MMBtu and 9.7 lb/hr as a three-hour average without duct burner firing 0.0047 lb/MMBtu and 16.3 lb/hr as a three-hour average with duct burner firing.
PM _{2.5} (including condensable PM)	0.0033 lb/MMBtu and 9.7 lb/hr as a three-hour average without duct burner firing 0.0047 lb/MMBtu and 16.3 lb/hr as a three-hour average with duct burner firing.
Sulfur dioxide	0.00112 lb/MMBtu
Nitrogen Oxides (as NO ₂)	2.0 ppmvd @ 15% O ₂ as a one-hour average
Carbon monoxide	1.5 ppmvd @ 15% O ₂ as a three-hour rolling average without duct burning 2.4 ppmvd @ 15% O ₂ as a three-hour rolling average with duct burning
Volatile organic compounds	0.7 ppmvd @ 15% O ₂ without duct burner firing 1.6 ppmvd @ 15% O ₂ with duct burner firing
Sulfuric acid mist	0.00058 lb/MMBtu without duct burner firing 0.00067 lb/MMBtu with duct burner firing

Where:

ppmvd = parts per million by volume on a dry gas basis, corrected to 15 percent O₂.

Short-term emission limits represent averages for a three-hour sampling period except for nitrogen oxides, which shall be calculated as a one-hour average.

Unless otherwise specified, limits apply at all times except during startup, shutdown, and malfunction. Periods considered startup and shutdown are defined in Condition 12 of this permit.

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these limits may be determined as stated in Conditions 2, 5, 6, 26, 49, 52, 61, and 62
 (9 VAC 5-50-280, 9 VAC 5-80-1705, 9 VAC 5-80-1715)

41. **Emission Limits: Combustion Turbines** – CO_{2e} emissions from the combined cycle gas turbine generators and associated duct-fired HRSG (T-1M, T-2M, T-3M) shall not exceed 920 lbs/MWh (net HHV) calculated monthly on a 12-operating month annual average basis. Compliance may be determined each month by summing the CO_{2e} emissions for all hours in

which power is being generated to the grid during the previous 12 months and dividing that value by the sum of the electrical energy output over that same period.

(9 VAC 5-50-280, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)

42. **Annual Process Emission Limits** – Emissions from the operation of each of the three combined cycle gas turbine generators and associated duct-fired HRSG (T-1M, T-2M, T-3M) shall not exceed the limits specified below:

PM ₁₀ (including condensable)	71.4 tons/yr	(on a 12-month, rolling total)
PM _{2.5} (including condensable)	71.4 tons/yr	(on a 12-month, rolling total)
Sulfur Dioxide	16.9 tons/yr	(on a 12-month, rolling total)
Nitrogen Oxides (as NO ₂)	110.3 tons/yr	(on a 12-month, rolling total)
Carbon Monoxide	195.0 tons/yr	(on a 12-month, rolling total)
Volatile Organic Compounds	108.9 tons/yr	(on a 12-month, rolling total)
Sulfuric Acid Mist	10.2 tons/yr	(on a 12-month, rolling total)
Lead	0.0074 tons/yr	(on a 12-month, rolling total)
CO ₂ e	1,765,324 tons/yr	(on a 12-month, rolling total)

These emissions are derived from the estimated overall emission contribution from operating limits, including periods of startup and shutdown. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 2, 5, 6, 9, 10, 11, 27, 28, 51, 52 and 55.

(9 VAC 5-50-280, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)

43. **Process Emission Limits** – Emissions from the operation of the auxiliary boiler (B-1) shall not exceed the limits specified below:

PM ₁₀ (including condensable)	0.3	lbs/hr	1.0	tons/yr	(on a 12-month, rolling total)
PM _{2.5} (including condensable)	0.3	lbs/hr	1.0	tons/yr	(on a 12-month, rolling total)
Nitrogen Oxides (as NO ₂)	0.4	lb/hr	1.5	tons/yr	(on a 12-month, rolling total)
Carbon Monoxide	1.2	lbs/hr	5.0	tons/yr	(on a 12-month, rolling total)
Volatile Organic Compounds	0.2	lbs/hr	0.7	tons/yr	(on a 12-month, rolling total)
CO ₂ e			15,682 tons/yr		(on a 12-month, rolling total)

These emissions are derived from the estimated overall emission contribution from operating limits, including periods of startup and shutdown. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 13, 14, 26 and 29.

(9 VAC 5-50-280, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)

44. **Process Emission Limits** - Emissions from the operation of the electrical circuit breakers (CB-1 through CB-11) shall not exceed the limits specified below:

CO ₂ e	2,162 tons/yr (on a 12-month rolling total)
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These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 1 and 25.

(9 VAC 5-50-280, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)

45. **Process Emission Limits** - Emissions from the operation of the fire water pump (FWP-1) shall not exceed the limits specified below:

PM (filterable only)	0.13	g/kW-hr
PM ₁₀ (including condensable)	0.26	g/kW-hr
PM _{2.5} (including condensable)	0.26	g/kW-hr
Sulfur Dioxide	0.00156	lb/MMBtu
Nitrogen Oxides (as NO ₂) + Non-methane hydrocarbons	3.9	g/kW-hr (NO _x plus NMHC = (3.8+0.1))
Carbon Monoxide	0.9	g/kW-hr
CO ₂ e	103.9	tons/yr (on a 12-month rolling total)

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 30, 32, 33, 35, 37 and 51.

(9 VAC 5-50-280, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)

46. **Process Emission Limits** - Emissions from the operation of the diesel emergency generator (EG-1) shall not exceed the limits specified below:

PM (including condensable)	0.2	g/kW-hr
PM ₁₀ (including condensable)	0.4	g/kW-hr
PM _{2.5} (including condensable)	0.4	g/kW-hr
Sulfur Dioxide	0.00154	lb/MMBtu

Nitrogen Oxides (as NO ₂) + Non-methane hydrocarbons	6.4	g/kW-hr	7.8	tons/yr (on a 12-month rolling total)
Carbon Monoxide	3.5	g/kW-hr	4.3	tons/yr (on a 12-month rolling total)
CO ₂ e			814.0	tons/yr (on a 12-month rolling total)

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 30, 32, 34, 35, 37, and 51.

(9 VAC 5-50-280, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)

47. **Process Emission Limits** - Emissions from the operation of the propane emergency generator (EG-2) shall not exceed the limits specified below:

PM ₁₀ (including condensable)	0.019	g/hp-hr		
PM _{2.5} (including condensable)	0.019	g/hp-hr		
Sulfur Dioxide	0.00059	lb/MMBtu		
Nitrogen Oxides (as NO ₂)	2.0	g/hp-hr		
Carbon Monoxide	4.0	g/hp-hr	0.4	tons/yr (on a 12-month rolling total)
CO ₂ e			46.0	tons/yr (on a 12-month rolling total)

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 30, 32, 34, 35, 37, and 51.

(9 VAC 5-50-280, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)

48. **Process Emission Limits** – Emissions from the operation of the fuel gas heaters (GH-1 through GH-3) combined shall not exceed the limits specified below:

PM ₁₀ (including condensable)	0.007	lbs/MMBtu	0.8	tons/yr (on a 12-month, rolling total)
PM _{2.5} (including condensable)	0.007	lbs/MMBtu	0.8	tons/yr (on a 12-month, rolling total)
Nitrogen Oxides (as NO ₂)	0.011	lb/MMBtu	1.2	tons/yr (on a 12-month, rolling total)
Carbon Monoxide	0.9	lbs/hr	3.9	tons/yr (on a 12-month, rolling total)
Volatile Organic Compounds			0.6	tons/yr (on a 12-month, rolling total)
CO ₂ e			12,299	tons/yr (on a 12-month, rolling total)

These emissions are derived from the estimated overall emission contribution from operating limits, including periods of startup and shutdown. Exceedance of the operating limits may be

considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 2, 5, 6, 9, 10, 11, 27, 28, and 51. (9 VAC 5-50-280, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)

49. **Visible Emission Limit** - Visible emissions from the combined cycle gas turbine generators and associated duct-fired HRSG (T-1M, T-2M, T-3M) shall not exceed 10 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 20 percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A). This condition applies at all times except during startup, shutdown (as defined in Condition 12), and malfunction.
(9 VAC 5-50-80 and 9 VAC 5-50-280)
50. **Visible Emission Limit** - Visible emissions from the fuel gas heaters (GH-1 through GH-2) and auxiliary boiler (B-1) shall not exceed 10 percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A).
(9 VAC 5-50-80 and 9 VAC 5-50-280)
51. **Visible Emission Limit** - Visible emissions from the emergency fire water pump (FWP-1) and emergency generators (EG-1 and EG-2) shall not exceed 10 percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A). This condition applies at all times except during startup, shutdown, and malfunction.
(9 VAC 5-50-80 and 9 VAC 5-50-280)

CEMS/

52. **CEMS** - Continuous Emission Monitoring Systems (CEMS) shall be installed to measure and record the emissions of NO_x (measured as NO₂), CO₂ and CO from each combined cycle combustion turbine and associated duct-fired HRSG (T-1M, T-2M, T-3M) in ppmvd, corrected to 15 percent O₂. CEMS for NO_x shall meet the design specifications of 40 CFR Part 75 whereas CEMS for CO shall be installed, evaluated, and operated according to the monitoring requirements in 40 CFR 60.13. The CEMS shall also measure and record the oxygen content of the flue gas at each location where NO_x and CO emissions are monitored and measure heat input and power output. A CEMS or alternative method as allowed by 40 CFR 75 shall be used to measure sulfur dioxide emissions to comply with the requirements of 40 CFR 75 (acid rain program monitoring). For compliance with the emission limits contained in Condition 40, NO_x data and CO data shall each be reduced to 1-hour block averages. The relative accuracy test audit (RATA) of the NO_x CEMS shall be performed on a lb/MMBtu basis.
(9 VAC 5-50-350 and 9 VAC 5-50-40)
53. **CEMS Performance Evaluations** - Performance evaluations of the NO_x and, if applicable, SO₂ CEMS shall be conducted in accordance with 40 CFR Part 75, Appendix A, and shall take place during the performance tests under 9 VAC 5-50-30 or within 30 days thereafter. Two copies of the performance evaluations report shall be submitted to the Piedmont Region within 45 days of the evaluation. The continuous monitoring systems shall be installed and

operational prior to conducting initial performance tests. Verification of operational status shall, as a minimum, include completion of the manufacturer's written requirements or recommendations for installation, operation and calibration of the device. A 30 day notification, prior to the demonstration of continuous monitoring system's performance, and subsequent notifications shall be submitted to the Piedmont Region.
(9 VAC 5-50-350 and 9 VAC 5-50-40)

54. **CEMS Quality Control Program** - A CEMS quality control program which is equivalent to the requirements of 40 CFR 75 Appendix B shall be implemented for all continuous monitoring systems.
(9 VAC 5-50-350 and 9 VAC 5-50-40)

55. **CEMS Emissions Data** – CEMS data shall be used to report annual emissions of NO_x, CO and CO₂ from the stack of each combined cycle combustion turbine and associated duct-fired HRSG (T-1M, T-2M, T-3M) in tons/yr for the purpose of emission inventory.
(9 VAC 5-50-50)

56. **Excess Emissions and Monitor Downtime for NO_x - Continuous Monitoring Systems**
For the purpose of this permit, periods of excess emissions and monitor downtime that must be reported under Condition 58 are defined as follows:

- a. An excess emission period is any unit operating period in which the average one-hour NO_x emission rate exceeds the applicable emission limit in Condition 40; and
- b. A period of monitor downtime is any unit operating hour in which the data for any of the following parameters are either missing or invalid: NO_x concentration, O₂ concentration, fuel flow rate, steam pressure, or megawatts. The steam flow rate is only required if the permittee uses this information for compliance purposes.

(9 VAC 5-50-50, 9 VAC 5-50-410, 40 CFR 60.7(c), and 40 CFR 60.4380)

57. **Excess Emissions and Monitor Downtime for SO₂ - Continuous Monitoring Systems**
Excess emissions and monitoring downtime are defined, for the purpose of this permit, as follows:

- a. For samples of gaseous fuel obtained using daily sampling or for proportional sampling, an excess emission occurs each unit operating hour included in the period beginning on the date and hour of any sample for which the sulfur content of the fuel being fired in the combustion turbine exceeds the applicable limit and ending on the date and hour that a subsequent sample is taken that demonstrates compliance with the sulfur limit; and
- b. A period of monitor downtime begins when a required sample is not taken by its due date. A period of monitor downtime also begins on the date and hour of a required sample, if invalid results are obtained. The period of monitor downtime ends on the date and hour of the next valid sample.

(9 VAC 5-50-50, 9 VAC 5-50-410, 40 CFR 60.7(c), and 40 CFR 60.4385)

- 58. Reports for Continuous Monitoring Systems** - The permittee shall furnish written reports to the Piedmont Region of excess emissions from any process monitored by a continuous monitoring system (CEMS) on a quarterly basis, postmarked no later than the 30th day following the end of the calendar quarter. These reports shall include, but are not limited to the following information:
- The magnitude of excess emissions, any conversion factors used in the calculation of excess emissions, and the date and time of commencement and completion of each period of excess emissions;
 - Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the process, the nature and cause of the malfunction (if known), the corrective action taken or preventative measures adopted;
 - The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments; and
 - When no excess emissions have occurred or the continuous monitoring systems have not been inoperative, repaired or adjusted, such information shall be stated in that report.
 - Excess emission reports for sulfur dioxide and nitrogen dioxide as required in 40 CFR 60.4395.
- (9 VAC 5-50-50)

59. Excess Emissions for Continuous Monitoring Systems – For purposes of identifying excess emissions:

- All CEMS data must be reduced to hourly averages as specified in 40 CFR 60.13(h);
 - For each operating hour in which a valid hourly average, as described in 40 CFR 60.4345(b), is obtained for both NO_x and diluent monitors, the data acquisition and handling system must calculate and record the hourly NO_x emission rate in units of ppm, using the appropriate equation in 40 CFR Part 60, Appendix A, Method 19. For any hour in which the hourly average O₂ concentration exceeds 19.0 percent O₂, a diluent cap value of 19.0 percent O₂ may be used in the emission calculations; and
 - Only quality assured data from the CEMS shall be used to identify excess emissions. Periods where the missing data substitution procedures in 40 CFR 75, Subpart D are applied are to be reported as monitor downtime in the excess emissions and monitoring performance report required under 40 CFR 60.7(c).
- (9 VAC 5-50-50, 9 VAC 5-50-410, 40 CFR 60.7(c), and 40 CFR 60.4350)

INITIAL COMPLIANCE DETERMINATION

- 60. Emissions Testing** - The permitted facility shall be constructed so as to allow for emissions testing upon reasonable notice at any time, using appropriate methods. This includes constructing the facility/equipment such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and providing a stack or duct

that is free from excessive cyclonic flow as defined in 40 CFR 60 Appendix A. Sampling ports shall be provided at the appropriate locations (in accordance with the applicable performance specification in 40 CFR Part 60, Appendix B) and safe sampling platforms and access shall be provided.

(9 VAC 5-50-30 F and 9 VAC 5-80-1675)

61. **Stack Test: Turbines** - Initial performance tests shall be conducted for CO, PM₁₀ (including condensable PM₁₀), PM_{2.5}, and total VOC from each combustion turbine and associated duct burner (T-1M, T-2M, and T-3M) to determine compliance with the emission limits contained in Condition 40. The tests shall be performed and demonstrate compliance within 60 days after achieving the maximum production rate at which the facility will be operated but in no event later than 180 days after start-up of the permitted facility. Tests shall be conducted and reported and data reduced as set forth in 9 VAC 5-50-30 and the test methods and procedures contained in each applicable section or subpart listed in 9 VAC 5-50-410. Tests shall be conducted for two different operating scenarios: natural gas firing with the duct burners off; and natural gas firing with the duct burners on. The details of the tests are to be arranged with the Piedmont Regional Office. The permittee shall submit a test protocol at least 30 days prior to testing. One copy of the test results shall be submitted to the Piedmont Regional Office within 45 days of test completion and shall conform to the test report format enclosed with this permit.

(9 VAC 5-50-30, 9 VAC 5-80-1675, and 9 VAC 5-50-410)

62. **Initial Performance Test – Combustion Turbines** – Initial performance tests shall be conducted on each combustion turbine and associated duct burner (T-1M, T-2M, and T-3M) for NO_x (as NO₂) to determine compliance with the limits contained in Condition 40 as follows:
- a. 40 CFR 60, Appendix A, Methods 7E or 20 shall be used to measure the NO_x concentration (in ppm). Sampling traverse points for NO_x and (if applicable) diluent gas are to be selected following EPA Method 20 or EPA Method 1 (non-particulate procedures), and sampled for equal time intervals. The sampling must be performed with a traversing single-hole probe, or, if feasible, with a stationary multi-hole probe that samples each of the points sequentially. Alternatively, a multi-hole probe designed and documented to sample equal volumes from each hole may be used to sample simultaneously at the required points.
 - b. Notwithstanding Condition 62.a. above, the permittee may test at fewer points than are specified in Method 1 or Method 20 if the following conditions are met: The permittee may perform a stratification test for NO_x and diluent pursuant to the procedures specified in 40 CFR 75, Appendix A, Section 6.5.6.1(a) through (e). Once the stratification sampling is completed, the permittee may use the following alternative sample point selection criteria for the performance test:
 - i. If each of the individual traverse point NO_x concentrations is within ±10 percent of the mean concentration for all traverse points, or the individual traverse point diluent concentrations differs by no more than ±5ppm or ±0.5 percent O₂ from the mean for

all traverse points, three points (located either 16.7, 50.0 and 83.3 percent of the way across the stack or duct, or, for circular stacks or ducts greater than 2.4 meters (7.8 feet) in diameter, at 0.4, 1.2, and 2.0 meters from the wall) may be used. The three points must be located along the measurement line that exhibited the highest average NO_x concentration during the stratification test; or

- ii. The permittee may sample at a single point, located at least 1 meter from the stack wall or at the stack centroid if each of the individual traverse point NO_x concentrations is within ± 2.5 percent of the mean concentration for all traverse points, or the individual traverse point diluent concentrations differs by no more than ± 1 ppm or ± 0.15 percent O_2 from the mean for all traverse points.
- c. The performance test must be done at any load condition as required by 40 CFR 60.4400(b). Testing may be performed at the highest achievable load point, if at least 75 percent of peak load cannot be achieved in practice. Three separate test runs for each performance test must be conducted. The minimum time per run is 20 minutes.
- d. The permittee must measure the total NO_x emissions after the duct burner rather than directly after the turbine. The duct burner must be in operation during the performance test.
- e. Compliance with the applicable emission limit in Condition 40 must be demonstrated at each tested load level. Compliance is achieved if the three-run arithmetic average NO_x emission rate at each tested level meets the applicable emission limit in Condition 40.
- f. The performance evaluation of the CEMS may either be conducted separately or (as described in 40 CFR 60.4405) as part of the initial performance test of the affected unit.
- g. The ambient temperature must be greater than 0°F during the performance test.
- h. The permittee may use the following as alternatives to the reference methods and procedures specified in this condition:
 - i. Perform a minimum of nine RATA reference method runs, with a minimum time per run of 21 minutes, at a single load level, as required by 40 CFR 60.4400(b). The ambient temperature must be greater than 0°F during the RATA runs.
 - ii. Compliance with the applicable emission limit in Condition 40 is achieved if the arithmetic average of all of the NO_x emission rates for the RATA runs, expressed in units of ppm at 15% O_2 , does not exceed the emission limit.

The tests shall be performed, reported, and demonstrate compliance within 60 days after achieving the maximum production rate at which the unit will be operated but in no event later than 180 days after start-up of the permitted unit. Tests shall be conducted and reported and data reduced as set forth in 9 VAC 5-50-30 and the test methods and procedures contained in each applicable section or subpart listed in 9 VAC 5-50-410. The details of the tests are to be arranged with the Piedmont Regional Office. The permittee shall submit a test protocol at least 30 days prior to testing. One copy of the test results shall be submitted to the Piedmont Regional Office, within 45 days after test completion but no later than 180 days

after startup of the permitted unit and shall conform to the test report format enclosed with this permit.

(9 VAC 5-50-30, 9 VAC 5-50-410, and 9 VAC 5-80-1675)

63. **Initial Performance Test – Combustion Turbines** – Initial performance tests shall be conducted on each combustion turbine and associated duct burner (T-1M, T-2M, and T-3M) for SO₂ to determine compliance with the limits contained in Condition 40. The permittee may use one of the following three methods (a., b. or c. below) to conduct the performance test:
- a. If the permittee chooses to periodically determine the sulfur content of the fuel combusted in the turbine, a representative fuel sample would be collected following ASTM D5287 (incorporated by reference, see 40 CFR 60.17 or by manually sampling using Gas Process Association Standard 2166) for natural gas. The fuel analyses may be performed either by the permittee, a service contractor retained by the permittee, the fuel vendor, or any other qualified agency. The samples for the total sulfur content of the fuel shall be analyzed using ASTM D1072, or alternatively D3246, D4084, D4468, D4810, D6228, D6667, or Gas Processors Association Standard 2377 (all of which are incorporated by reference, see 40 CFR 60.17).
 - b. 40 CFR 60, Appendix A, Methods 6, 6C, 8, or 20 shall be used to measure the SO₂ concentration (in parts per million (ppm)). In addition, the American Society of Mechanical Engineers (ASME) standard, ASME PTC 9–10–1981–Part 10, “Flue and Exhaust Gas Analyses,” manual methods for sulfur dioxide (incorporated by reference, see 40 CFR 60.17) can be used instead of EPA Methods 6 or 20.
 - c. 40 CFR 60, Appendix A, Methods 6, 6C, or 8 and 3A, or 20 shall be used to measure the SO₂ and diluent gas concentrations. In addition, the permittee may use the manual methods for sulfur dioxide ASME PTC 19–10–1981–Part 10 (incorporated by reference, see 40 CFR 60.17).

The tests shall be performed, reported, and demonstrate compliance within 60 days after achieving the maximum production rate at which the unit will be operated but in no event later than 180 days after start-up of the permitted unit. Tests shall be conducted and reported and data reduced as set forth in 9 VAC 5-50-30 and the test methods and procedures contained in each applicable section or subpart listed in 9 VAC 5-50-410. The details of the tests are to be arranged with the Piedmont Regional Office. The permittee shall submit a test protocol at least 30 days prior to testing. One copy of the test results shall be submitted to the Piedmont Regional Office, within 45 days after test completion but no later than 180 days after startup of the permitted facility and shall conform to the test report format enclosed with this permit.

(9 VAC 5-50-30, 9 VAC 5-50-410 and 9 VAC 5-80-1675)

64. **Stack Test: Auxiliary boiler and fuel gas heater** - Initial performance tests shall be conducted for NO_x and CO from the auxiliary boiler (B-1) and fuel gas heaters (GH-1 through GH-3) to determine compliance with the emission limits contained in Conditions 43

and 48. The tests shall be performed, reported and demonstrate compliance within 60 days after the boiler or fuel gas heater, as applicable, reach the maximum load level at which the unit will be operated but in no event later than 180 days after its initial start-up. Tests shall be conducted and reported and data reduced as set forth in 9 VAC 5-50-30 and the test methods and procedures contained in each applicable section or subpart listed in 9 VAC 5-50-410. The details of the tests are to be arranged with the Piedmont Regional Office. The permittee shall submit a test protocol at least 30 days prior to testing. One copy of the test results shall be submitted to the Piedmont Regional Office within 45 days of test completion but no later than 180 days after startup of the permitted unit and shall conform to the test report format enclosed with this permit.

(9 VAC 5-50-30, 9 VAC 5-80-1985 E, and 9 VAC 5-50-410)

- 65. Visible Emissions Evaluation – Combustion Turbines** - Concurrently with the initial performance tests, Visible Emission Evaluations (VEE) in accordance with 40 CFR Part 60, Appendix A, Method 9, shall be conducted by the permittee on each combustion turbine and associated duct burner (T-1M, T-2M, and T-3M). Each test shall consist of 30 sets of 24 consecutive observations (at 15 second intervals) to yield a six-minute average. At least one VEE shall be conducted for each of the operating conditions and loads for which emissions tests are required for the stack tests contained in Condition 61. The details of the tests are to be arranged with the Piedmont Regional Office. The permittee shall submit a test protocol at least 30 days prior to testing. The evaluation shall be performed, reported, and demonstrate compliance within 60 days after achieving the maximum production rate at which the unit will be operated but in no event later than 180 days after start-up of the permitted unit.

Should conditions prevent concurrent opacity observations, the Piedmont Regional Office shall be notified in writing, within seven days, and visible emissions testing shall be rescheduled within 30 days. Rescheduled testing shall be conducted under the same conditions (as possible) as the initial performance tests. One copy of the test result shall be submitted to the Piedmont Regional Office within 45 days after test completion but no later than 180 days after startup of the permitted facility and shall conform to the test report format enclosed with this permit.

(9 VAC 5-50-30 and 9 VAC 5-80-1675)

- 66. Visible Emissions Evaluation - Auxiliary Boiler and fuel gas heaters** - Concurrently with the initial performance tests in Condition 64, Visible Emission Evaluations (VEE) in accordance with 40 CFR Part 60, Appendix A, Method 9, shall be conducted by the permittee on the auxiliary boiler (B-1) and fuel gas heaters (GH-1 through GH-3). Each test shall consist of 10 sets of 24 consecutive observations (at 15 second intervals) to yield a six-minute average. The details of the tests are to be arranged with the Piedmont Regional Office. The permittee shall submit a test protocol at least 30 days prior to testing. The evaluation shall be performed, reported, and demonstrate compliance within 60 days after achieving the maximum production rate at which the boiler will be operated but in no event later than 180 days after start-up of the boiler.

Should conditions prevent concurrent opacity observations, the Piedmont Regional Office shall be notified in writing, within seven days, and visible emissions testing shall be rescheduled within 30 days. Rescheduled testing shall be conducted under the same conditions (as possible) as the initial performance tests. One copy of the test result shall be submitted to the Piedmont Regional Office within 45 days after test completion but no later than 180 days after startup of the permitted facility and shall conform to the test report format enclosed with this permit.

(9 VAC 5-50-30 and 9 VAC 5-80-1675)

67. **Testing: Heat Rate Limit** - Initial compliance testing, using ASME Performance Test Code on Overall Plant Performance (ASME PTC 46-1996) or equivalent method approved by the Piedmont Regional Office, shall be conducted for the heat rate limit of the power blocks (i.e., a combination of T-1M, T-2M, and T-3M and the steam turbine generator) to show compliance with the heat rate limit contained in Condition 11. The testing shall be performed, reported and demonstrate compliance within 90 days after achieving the maximum production rate at which the facility will be operated but in no event later than 180 days after start-up of the permitted facility. Testing shall be conducted when combusting natural gas. The details of the tests are to be arranged with the Piedmont Regional Office. The permittee shall submit a test protocol at least 30 days prior to testing. One copy of the test results shall be submitted to the Piedmont Regional Office within 45 days of test completion and shall conform to the test report format enclosed with this permit. An exceedance of the heat rate limit is not considered a violation of this permit, but triggers a requirement for the permittee to submit a maintenance plan to DEQ which specifies the actions the permittee plans to take in order to achieve the heat rate limit contained in Condition 11. The details of this plan are to be arranged with the Piedmont Regional Office. (9 VAC 5-50-30 and 9 VAC 5-80-1675)

CONTINUING COMPLIANCE DETERMINATION

68. **Annual Performance Test – Combustion Turbines** – Annual performance tests shall be conducted on each combustion turbine and associated duct burner (T-1M, T-2M, and T-3M) for SO₂ to determine compliance with the limits contained in Condition 40. The permittee may use one of the following three methods (a., b. or c. below) to conduct the performance test:
- a. If the permittee chooses to periodically determine the sulfur content of the fuel combusted in the turbine, a representative fuel sample would be collected following ASTM D5287 (incorporated by reference, see 40 CFR 60.17 or by manual sampling using the Gas Process Association Standard 2166) for natural gas. The fuel analyses may be performed either by the permittee, a service contractor retained by the permittee, the fuel vendor, or any other qualified agency. The samples for the total sulfur content of the fuel shall be analyzed using ASTM D1072, or alternatively D3246, D4084, D4468, D4810, D6228, D6667, or Gas Processors Association Standard 2377 (all of which are incorporated by reference, see 40 CFR 60.17).

- b. 40 CFR 60, Appendix A, Methods 6, 6C, 8, or 20 shall be used to measure the SO₂ concentration (in parts per million (ppm)). In addition, the American Society of Mechanical Engineers (ASME) standard, ASME PTC 9–10–1981–Part 10, “Flue and Exhaust Gas Analyses,” manual methods for sulfur dioxide (incorporated by reference, see 40 CFR 60.17) can be used instead of EPA Methods 6 or 20.
- c. 40 CFR 60, Appendix A, Methods 6, 6C, or 8 and 3A, or 20 shall be used to measure the SO₂ and diluent gas concentrations. In addition, the permittee may use the manual methods for sulfur dioxide ASME PTC 9–10–1981–Part 10 (incorporated by reference, see 40 CFR 60.17).

The tests shall be conducted on an annual basis (no more than 14 calendar months following the previous performance test). Tests shall be conducted and reported and data reduced as set forth in 9 VAC 5-50-30 and the test methods and procedures contained in each applicable section or subpart listed in 9 VAC 5-50-410. The details of the tests are to be arranged with the Piedmont Regional Office. The permittee shall submit a test protocol at least 30 days prior to testing. One copy of the test results shall be submitted to the Piedmont Regional Office, within 45 days after test completion and shall conform to the test report format enclosed with this permit.

(9 VAC 5-50-30, 9 VAC 5-50-410)

69. **Periodic Testing: Heat Rate Limit** – Every five years after initial evaluation of the heat rate limit of the power blocks, the permittee shall conduct a heat rate evaluation of the power blocks to show compliance with the heat rate limit contained in Condition 11. The details of the evaluation are to be arranged with the Piedmont Regional Office.
(9 VAC 5-50-30 and 9 VAC 5-80-1675)

70. **Stack Tests** – Upon request by DEQ, the permittee shall conduct additional performance tests to determine compliance with the emission limits contained in this permit. The details of the tests shall be arranged with the Piedmont Regional Office.
(9 VAC 5-50-30 G)

RECORDS

71. **On Site Records** - The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the Piedmont Region. These records shall include, but are not limited to:
- a. Annual hours of operation of the emergency fire water pump (FWP-1) and emergency generators (EG-1 and EG-2) for emergency purposes and for maintenance checks and readiness testing, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months;

- b. All fuel supplier certifications for the ULSD fuel used in the emergency units (EG-1 and FWP-1);
- c. Monthly and annual throughput of natural gas to the three combustion turbines and associated duct burners (T-1M, T-2M, and T-3M), calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months;
- d. Time, date and duration of each startup, shutdown, and malfunction period for each combustion turbine and associated duct burner (T-1M, T-2M, and T-3M);
- e. Monthly and annual throughput of natural gas to the auxiliary boiler (B-1) and the fuel gas heaters (GH-1 through GH-3), calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months;
- f. Fuel quality records for natural gas combusted in the combustion turbine and associated duct burner (T-1M, T-2M, and T-3M), auxiliary boiler (B-1), and fuel gas heaters (GH-1 through GH-3);
- g. Continuous monitoring system emissions data, calibrations and calibration checks, percent operating time, and excess emissions;
- h. Operation and control device monitoring records for each SCR system and oxidation catalyst as required in Conditions 3 and 7;
- i. Weekly logs of dissolved solids content of cooling water to the four inlet coolers (IC-1 through IC-4) and the auxiliary equipment chiller (AEC-1).
- j. Scheduled and unscheduled maintenance, and operator training.
- k. Results of all stack tests, visible emission evaluations, and performance evaluations.
- l. Manufacturer's instructions for proper operation of equipment.

These records shall be available for inspection by the DEQ and shall be current for the most recent five years.

(9 VAC 5-50-50)

72. **Emissions Testing** - The electric generating facility shall be constructed so as to allow for emissions testing upon reasonable notice at any time, using appropriate methods. This includes constructing the facility/equipment such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and providing a stack or duct that is free from excessive cyclonic flow as defined in 40 CFR 60 Appendix A. Sampling ports shall be provided when requested at the appropriate locations and safe sampling platforms and access shall be provided.

(9 VAC 5-50-30 F and 9 VAC 5-80-1180)

NOTIFICATIONS

73. Initial Notifications - The permittee shall furnish written notification to the Piedmont Regional Office of:

- a. The actual date on which construction of the electric power generation facility commenced within 30 days after such date.
- b. The anticipated start-up date of the electric power generation facility postmarked not more than 60 days nor less than 30 days prior to such date.
- c. The actual start-up date of the electric power generation facility within 15 days after such date.
- d. The anticipated date of continuous monitoring system performance evaluations postmarked not less than 30 days prior to such date.
- e. The anticipated date of performance tests of the combustion turbines (T-1M, T-2M, and T-3M), auxiliary boiler (B-1), and fuel gas heaters (GH-1 through GH-3), postmarked at least 30 days prior to such date.

Copies of the written notification referenced in items a through e above are to be sent to:

Associate Director
Office of Air Enforcement and Compliance Assistance (3AP20)
U.S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

(9 VAC 5-50-50 and 9 VAC 5-50-410)

GENERAL CONDITIONS

74. Permit Invalidation –This permit to construct the electric power generation facility shall become invalid, unless an extension is granted by the DEQ, if:

- a. A program of continuous construction or modification is not commenced within 18 months from the date of this permit.
- b. A program of construction or modification is discontinued for a period of 18 months or more, or is not completed within a reasonable time, except for a DEQ approved period between phases of the phased construction of a new stationary source or project.

(9 VAC 5-80-1985)

75. Permit Suspension/Revocation - This permit may be suspended or revoked if the permittee:

- a. Knowingly makes material misstatements in the permit application or any amendments to it;
- b. Fails to comply with the conditions of this permit;

- c. Fails to comply with any emission standards applicable to a permitted emissions unit, ;
 - d. Causes emissions from the stationary source which result in violations of , or interfere with the attainment and maintenance of, any ambient air quality standard; or
 - e. Fails to operate in conformance with any applicable control strategy, including any emission standards or emission limitations, in the State Implementation Plan in effect at the time an application for this permit is submitted.
- (9 VAC 5-80-1985 F)

76. Right of Entry - The permittee shall allow authorized local, state, and federal representatives, upon the presentation of credentials:

- a. To enter upon the permittee's premises on which the facility is located or in which any records are required to be kept under the terms and conditions of this permit;
- b. To have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit or the State Air Pollution Control Board Regulations;
- c. To inspect at reasonable times any facility, equipment, or process subject to the terms and conditions of this permit or the State Air Pollution Control Board Regulations; and
- d. To sample or test at reasonable times.

For purposes of this condition, the time for inspection shall be deemed reasonable during regular business hours or whenever the facility is in operation. Nothing contained herein shall make an inspection time unreasonable during an emergency.

(9 VAC 5-170-130 and 9 VAC 5-80-1180)

77. Maintenance/Operating Procedures – At all times, including periods of start-up, shutdown, and malfunction, the permittee shall, to the extent practicable, maintain and operate the affected source, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions.

The permittee shall take the following measures in order to minimize the duration and frequency of excess emissions, with respect to air pollution control equipment and process equipment which affect such emissions:

- a. Develop a maintenance schedule and maintain records of all scheduled and non-scheduled maintenance.
- b. Maintain an inventory of spare parts.
- c. Have available written operating procedures for equipment. These procedures shall be based on the manufacturer's recommendations, at a minimum.
- d. Train operators in the proper operation of all such equipment and familiarize the operators with the written operating procedures, prior to their first operation of such equipment. The permittee shall maintain records of the training provided including the names of trainees, the date of training and the nature of the training.

Records of maintenance and training shall be maintained on site for a period of five years and shall be made available to DEQ personnel upon request.

(9 VAC 5-50-20 E)

78. **Record of Malfunctions** – The permittee shall maintain records of the occurrence and duration of any bypass, malfunction, shutdown or failure of the facility or its associated air pollution control equipment that results in excess emissions for more than one hour. Records shall include the date, time, duration, description (emission unit, pollutant affected, cause), corrective action, preventive measures taken and name of person generating the record.
(9VAC 5-20-180 J)

79. **Notification for Facility or Control Equipment Malfunction** - The permittee shall furnish notification to the Piedmont Regional Office of malfunctions of the affected facility or related air pollution control equipment that may cause excess emissions for more than one hour, by facsimile transmission, telephone, email, or telegraph. Such notification shall be made as soon as practicable but no later than four daytime business hours after the malfunction is discovered. The permittee shall provide a written statement giving all pertinent facts, including the estimated duration of the breakdown, within two weeks of discovery of the malfunction. When the condition causing the failure or malfunction has been corrected and the equipment is again in operation, the permittee shall notify the Piedmont Regional Office.
(9 VAC 5-20-180 C)

80. **Violation of Ambient Air Quality Standard** - The permittee shall, upon request of the DEQ, reduce the level of operation or shut down a facility, as necessary to avoid violating any primary ambient air quality standard and shall not return to normal operation until such time as the ambient air quality standard will not be violated.
(9 VAC 5-20-180 I)

81. **Change of Ownership** - In the case of a transfer of ownership of a stationary source, the new owner shall abide by any current permit issued to the previous owner. The new owner shall notify the Piedmont Regional Office of the change of ownership within 30 days of the transfer.
(9 VAC 5-80-1985 E)

82. **Permit Copy** - The permittee shall keep a copy of this permit on the premises of the facility to which it applies.
(9 VAC 5-80-1985 E)

STATE-ONLY ENFORCEABLE REQUIREMENTS

The following terms and conditions are included in this permit to implement the requirements of 9 VAC 5-40-130 et seq., 9 VAC 5-50-130 et seq., 9 VAC 5-60-200 et seq. and/or 9 VAC 5-60-300 et seq. and are enforceable only by the Virginia Air Pollution Control Board. Neither their

inclusion in this permit nor any resulting public comment period make these terms federally enforceable.

83. **Emission Limits** – Emissions from the electric power generation facility shall not exceed the limits specified below:

<u>Pollutant</u>	<u>CAS#</u>	<u>Lb/hr</u>	<u>Tons/yr</u>
Acrolein	107-02-8	0.041 lb/hr	0.162 tons/yr
Formaldehyde	50-00-0	1.370 lb/hr	5.870 tons/yr
Beryllium*	7440-41-7	--	0.00054 tons/yr
Cadmium	7440-43-9	0.011 lb/hr	0.049 tons/yr
Chromium	7440-47-3	0.014 lb/hr	0.063 tons/yr
Lead*	7439-92-1	--	0.022 tons/yr
Mercury*	7439-97-6	--	0.012 tons/yr
Nickel	7440-02-0	0.022 lb/hr	0.094 tons/yr

*Hourly emissions of these pollutants are exempt

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 6, 10, 12, and 27.

(9 VAC 5-60-320 and 9 VAC 5-80-1625G)

84. **On Site Records** – The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the Piedmont Regional Office. These records shall include, but are not limited to the average hourly, monthly, and annual emissions (in pounds and tons) of each toxic compound listed in Condition 83. Hourly emissions shall be calculated monthly. Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. These records shall be available for inspection by DEQ and current for at least the most recent five years.

(9 VAC 5-50-50, and 9 VAC 5-80-1625G)

SOURCE TESTING REPORT FORMAT

Report Cover

1. Plant name and location
2. Units tested at source (indicate Ref. No. used by source in permit or registration)
3. Test Dates.
4. Tester; name, address and report date

Certification

1. Signed by team leader/certified observer (include certification date)
2. Signed by responsible company official
3. *Signed by reviewer

Copy of approved test protocol

Summary

1. Reason for testing
2. Test dates
3. Identification of unit tested & the maximum rated capacity
4. *For each emission unit, a table showing:
 - a. Operating rate
 - b. Test Methods
 - c. Pollutants tested
 - d. Test results for each run and the run average
 - e. Pollutant standard or limit
5. Summarized process and control equipment data for each run and the average, as required by the test protocol
6. A statement that test was conducted in accordance with the test protocol or identification & discussion of deviations, including the likely impact on results
7. Any other important information

Source Operation

1. Description of process and control devices
2. Process and control equipment flow diagram
3. Sampling port location and dimensioned cross section Attached protocol includes: sketch of stack (elevation view) showing sampling port locations, upstream and downstream flow disturbances and their distances from ports; and a sketch of stack (plan view) showing sampling ports, ducts entering the stack and stack diameter or dimensions

Test Results

1. Detailed test results for each run
2. *Sample calculations
3. *Description of collected samples, to include audits when applicable

Appendix

1. *Raw production data
2. *Raw field data
3. *Laboratory reports
4. *Chain of custody records for lab samples
5. *Calibration procedures and results
6. Project participants and titles
7. Observers' names (industry and agency)
8. Related correspondence
9. Standard procedures

* Not applicable to visible emission evaluations